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(54) **Fabric softener compositions**

Gewebeweichmacherzusammensetzungen

Compositions d'adoucissants pour tissus

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(56) References cited:
EP-A- 0 002 085 EP-A- 0 043 622
EP-A- 0 299 787 GB-A- 2 207 446

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• **GB-A- 2 207 446**

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Description

Background of the Invention

5 The present invention relates to fabric softener compositions, especially adapted for use in the rinse cycle of a laundering process and, in particular, to both the concentrated and ready-for-use aqueous fabric softener compositions which are stable at both low and high ambient temperature, i.e. the compositions do not form a gel, and which are easily dispersible in water when used.

10 Compositions containing quaternary ammonium salts having at least one long chain hydrocarbyl group are commonly used to provide fabric softening benefits when employed in a laundry rinse operation; for example, see U.S. Patents 3,349,033; 3,644,203; 3,946,115; 3,997,453; 4,073,735; 4,119,545; etc.

For most aqueous softener compositions containing cationic quaternary ammonium compounds or imidazolium compounds as active ingredients, concentrations of such cationics has, in general, been limited to the range of about 3 to 6 or 7% by weight (see, e.g., U.S. Patent 3,904,533 and U.S. Patent 3,920,565). Such a low concentration is generally necessitated by the fact that cationics form gels in water systems at concentrations at above about 8%. While the use of electrolytes to lower the viscosity of such compositions is known (see, e.g. U.S. Patent 4,199,545), such electrolytes are far from satisfactory. From a functional point of view, the electrolytes often do not perform as required, particularly at concentration of the cationics in the neighborhood of about 12-15%. Further, while the performance of the electrolytes may mitigate some of the gelling problem, their use is far from satisfactory in providing a highly concentrated aqueous system of cationics which does not gel or severely change in viscosity within the usual range of temperatures encountered in the handling thereof, for example 0° F (about - 18°C) up to about 140°F (about 60°C).

15 In U.S. Patent 3,974,076, there is disclosed quaternary ammonium-containing softening composition of conventional cationic concentrations, i.e. about 3% to about 8%. These compositions are characterized by the very small particle size of the substantially water-insoluble quaternary ammonium softening compound, i.e. 90% by weight of the quaternary ammonium compound exists as particles which pass through a 1.2 micron filter. The components of the composition are present in the proportions of from about 2 parts to about 10 parts (preferably from about 3 to about 8 parts) by weight of the water dispersible quaternary ammonium compound; from about 0.1 to 2 parts by weight of the C₈ to C₂₀ fatty alcohol, with the weight ratio of quaternary compound to alcohol being in the range of from about 100: 1 to about 5:1; from about 0.1% to about 2.0% by weight of a nonionic surfactant, the balance being a water-soluble liquid carrier.

20 In fact, the use of fatty alcohols as softening ingredients or as viscosity regulating agents in fabric softening compositions has been described elsewhere in the patent literature. For example, U.S. Patent 4,213,867 to Cukier and Khan describes fabric conditioning compositions containing quaternary ammonium compounds and fatty alcohols or phosphoric acid esters thereof in admixture with a diluent; the compositions are pumpable at room temperature and are easily dispersed in water. These compositions are highly concentrated base mixes for subsequent dilution prior to distribution and use. The compositions generally contain between about 50 to 80% of quaternary ammonium compound, diluent (C₁ to C₄ alkanol plus water) constituting between about 15 to 35% of the base mix and a third component in an amount of from about 5 to 25% which is a C₁₈ to C₂₈ fatty alcohol or a phosphoric acid ester thereof or mixtures thereof. The base mix is diluted with water to form an aqueous emulsion of 2-10% concentration based on the combined active ingredients, i.e. quaternary ammonium compound and fatty alcohol or phosphate ester.

25 U.S. Patent 4,386,000 to Turner, et al. describes a concentrated fabric softening composition containing a cationic softener and a viscosity control agent which is a combination of a first component, which is a noncyclic hydrocarbon, fatty acid, fatty acid ester, or fatty alcohol, with a water-soluble cationic polymer having an average molecular weight in the range of from about 2,000 to about 250,000. The water-insoluble cationic fabric softener is present in the composition in an amount of from 8% to 22% and the viscosity regulator system includes from 0.5 to 6% of the first regulator component and from about 0.05 to about 1% of the water-soluble cationic polymer as the second regulator component.

30 The Turner, et al. patent is stated to be an improvement over the Verbruggen European Patent Application 79200801.3 corresponding to Verbruggen U.S. Patent 4,426,299. The Verbruggen patent discloses concentrated fabric softening compositions comprising water-insoluble cationic fabric softener and a viscosity control agent which may be a noncyclic hydrocarbon, a fatty acid, or ester thereof, or a fatty alcohol at a ratio of fabric softener to viscosity control agent of from 5:1 to 20:1. According to Turner, et al. these compositions are less effective as viscosity reducing agents and concentrated compositions at temperatures close to or above the Krafft point of the cationic softener.

35 European Patent Application 0086105 describes fabric softening compositions containing a cationic softener, lanolin and a viscosity control agent which may be an electrolyte, a polymer such a polyethylene glycol, a C₁₂ - C₄₀ hydrocarbon and halogen derivatives thereof, C₉ - C₂₄ fatty acids, fatty acid esters thereof, C₁₀ - C₁₈ fatty alcohols or water miscible solvents. The cationic softener's present in amounts of 0.5 to 30% by weight, the lanolin in amounts of from 0.25 to 40% by weight and, when the viscosity control agent is the fatty alcohol, it is present in amounts of 0.25 to 15% by weight. The aqueous medium comprises at least 25% of the composition and preferably at least 40% of the

composition. However, none of the actual examples shown in this patent include fatty alcohol viscosity adjusting agent.

United Kingdom Patent Application GB 2,007,734A describes a fabric softener concentrate for subsequent dilution to the final concentration of active ingredients. The concentrate contains a fatty quaternary ammonium salt which contains at least one long chain alkyl group of 8 to 30 carbon atoms, and an oil or substantially water-insoluble compound having oily/fatty properties. The latter includes, among others, long chain fatty alcohols. Proportions of quaternary fabric softener to fatty alcohol compound of 1:9, 1:5, 4:6, 9:10 or 9:1 by weight are shown, generally with a lower alkanol alone or with an additional nonionic surfactant to provide liquid concentrate or diluted composition. The fabric softening compositions, i.e. the concentrates diluted with water, are described as including from 3 to 20% by weight of active ingredients. However, the actual examples only show amounts of active ingredients ranging from about 2.33 to 10% by weight.

French Patent 2,298,600 and corresponding German Patent 2,503,026 to Hoechst A.G. describe liquid aqueous preparations for laundry softening-rinsing agents, which include a germicidal agent. These preparations include a mixture of a quaternary ammonium salt cationic fabric softener and an alkyl imidazolinium compound fabric softener compound at a weight ratio of 2:1 to 1:2; about 1 to 6% by weight of a cationic disinfecting agent; about 0.5 to 5% by weight of a long chain fatty alcohol; about 0.1 to 5% by weight of a lower alkanol having about 1 to 3 carbon atoms; 0 to about 5% by weight of a nonionic emulsifier and the balance water, perfume, coloring matter and optical brighteners.

German De 3,150,179-A1 to Hoechst A.G. relates to concentrated liquid premixtures of cationic fabric softeners with alkoxyated amines and an additional ingredient which may be a fatty alcohol. Example 3 of this patent shows a concentrate containing 40% of the cationic fabric softener, 45% oleyl alcohol and 15% alkoxyated amine. Example 5 shows a concentrate including 70% by weight of the cationic quaternary ammonium salt fabric softener, 20% isostearyl alcohol and 10% alkoxyated amine.

U.S. Patent 3,644,203 to Lamberti, et al. discloses a fabric softening composition which is a mixture of (a) cationic fabric softener and (b) a complex of (i) C₁₂ to C₂₂ fatty alkanol or alkane diol and (ii) alkali metal alkyl (C₁₂ to C₁₈) sulfate at a ratio of (a):(b) between 1.4:1 and 10:1 and a molar ratio (i):(ii) between 1:1 and 1:2.

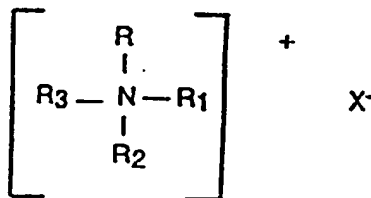
In British Patent 1,604,030 and substantial equivalent disclosures in U.S. Patents 4,179,382 and 4,237,016 and European Patent Specification 0002085 published March 2, 1983, there is a disclosure of cationic copolymers inter alia, of dialkylaminoalkyl methacrylate with styrene, neutral acrylic ester and N-vinyl pyrrolidone as scavengers for anionic-surfactant carry over when used with cationic softeners in the rinse cycle. The softening properties of the general class of polymeric cationic salts is also suggested.

While satisfactory results may be obtained with one or more of these prior art fabric softener compositions still further improvements are desired in terms of softening performance, ease of handling, storage stability, dispersibility in cold water, viscosity control and overall cost effectiveness.

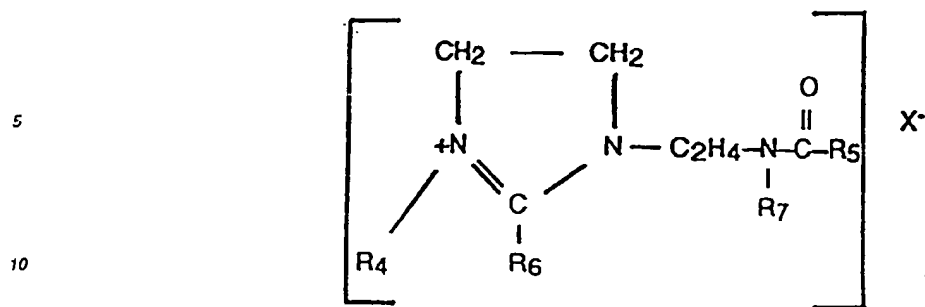
Summary of the invention

The present invention provides low and high temperature stable, medium viscosity, pourable, aqueous fabric softening composition comprising, by weight

(a) at least 2% of a dispersible, water-insoluble, cationic fabric softener selected from the group consisting of quaternary ammonium salts having the formula



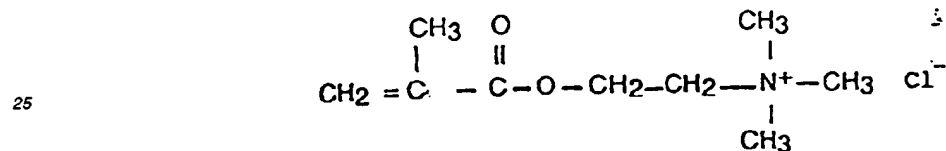
wherein R represents a hydrocarbyl group of from about 12 to 24 carbon atoms; R₁ represents a lower alkyl of 1 to 4 carbon atoms or a hydrocarbyl group of from 12 to 24 carbon atoms, R₂ and R₃ represent a lower alkyl of 1 to 4 carbon atoms and X⁻ represents chloride, bromide or methosulfate; and an imidazolinium compound having the formula :



wherein R_4 is hydrogen or a lower alkyl of 1 to 4 carbon atoms, R_5 is an alkyl containing from 9 to 25 carbon atoms, R_6 is an alkyl containing from 8 to 25 carbon atoms, R_7 is hydrogen or an alkyl of 1 to 4 carbon atoms and X^- is chloride, bromide or methosulfate and mixtures thereof;

(b) 0.2% to 10% of a fatty alcohol having a straight or branched chain alkyl or alkenyl group of 10 to 24 carbon atoms, the weight ratio of said cationic softener to said fatty alcohol being from 6:1 to 3:1;

(c) a water soluble, viscosity increasing cationic polymer which is a homopolymer of the following monomer unit



having a molecular weight of 50,000 to 2,000,000,

the weight ratio of said cationic softener to said polymer being from 50:1 to 2:1;
the total weight of (a) plus (b) plus (c) being 3% to 35% of the composition; and

(d) the balance being water.

Detailed Description of Preferred Embodiments

The compositions of the present invention are stable aqueous compositions which contain mixtures of a cationic fabric softener which is a water-dispersible quaternary ammonium compound salt or a water dispersible alkyl imidazolinium compound salt as hereinafter described in more detail, a fatty alcohol; and a cationic water-soluble polymer, also as hereinafter described.

Softening agents are used to render fabrics or textile soft, and the terms "softening" and "softener" refer to the handle, hand, touch, or feel; this is the tactile impression given by fabrics or textiles to the hand or body and is of aesthetic and commercial importance. The cationic fabric softeners used in the present invention are of the water-insoluble, albeit water-dispersible, quaternary ammonium compound salt or alkyl imidazolinium compound salt type including at least one, and preferably two hydrophobic groups containing at least 12 and preferably at least 14 carbon atoms.

One class of the cationic softeners is the quaternary ammonium salts of the formula I:



wherein R represents a hydrocarbyl group of from about 12 to 24 and preferably about 14 to 22 carbon atoms;

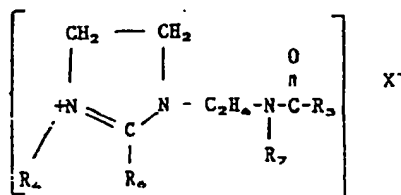
R_1 represents lower alkyl of 1 to 4, preferably 1 to 3, carbon atoms, or a hydrocarbyl group of from 12 to 24, preferably 14 to 22, carbon atoms; R_2 and R_3 represent lower alkyl of 1 to 4, preferably 1 to 3, carbon atoms, and X represents an anion capable of imparting water solubility or dispersibility, such as halide, e.g. chloride, bromide and iodide; sulfate, methosulfate, nitrite, nitrate, phosphate, and carboxylate, e.g. acetate, adipate, propionate, phthalate, benzoate, oleate, etc.

The hydrocarbyl groups are preferably alkyl but may be alkenyl aryl, or aralkyl and may include various substituents or interrupting groups such as halo, amide, hydroxyl, and carboxyl substituents or interrupting functional groups and ethoxy or polyethoxy interrupting groups. In addition, one or more of the lower alkyl groups may also be substituted, for example, by a hydroxy group. Typical cationic fabric softener compounds of formula I include the following:

distearyl dimethyl ammonium chloride
 ditallow dimethyl ammonium chloride
 dihexadecyl dimethyl ammonium chloride
 distearyl dimethyl ammonium bromide
 di(hydrogenated tallow) dimethyl ammonium bromide
 distearyl di(isopropyl) ammonium chloride
 distearyl dimethyl ammonium methosulfate

A highly preferred class of the cationic fabric softeners of formula I are the water-insoluble compounds wherein the groups R and R_1 are C_{14} to C_{18} , R_2 is methyl or ethyl and R_3 is methyl, ethyl, isopropyl, n-propyl, hydroxyethyl or hydroxypropyl.

A second class of the cationic fabric softener active ingredient is the imidazolinium compounds of the formula II:



wherein R_4 is hydrogen or lower alkyl of 1 to 4 and preferably 1 to 3 and especially preferably 1 or 2 carbon atoms, R_5 is an alkyl containing from 9 to 25 carbon atoms, preferably linear higher alkyl of from about 13 to 23 and especially preferably 13 to 19 carbon atoms, R_6 is an alkyl containing from 8 to 25 carbons and preferably a substantially linear higher alkyl group of about 13 to 23, and preferably 13 to 19 carbon atoms; R_7 is hydrogen or an alkyl containing from 1 to 4 carbon atoms, preferably 1 or 2 carbon atoms, and X is as defined above.

Typical examples of the alkyl imidazolinium compounds of formula II include:

methyl-1-tallow amido-ethyl-2-tallow imidazolinium methyl sulfate,
 methyl-1-oleyl amido-ethyl-2-oleyl imidazolinium methyl sulfate,
 1-methyl-1-(palmitoylamido)-ethyl-2-octadecyl-4,5-dihydroimidazolinium chloride,
 2-hepadecyl-1-methyl-1-(2-stearyl amido)-ethyl-imidazolinium chloride,
 2-lauryl-1-hydroxyethyl-1-oleyl-imidazolinium chloride.

Furthermore, mixtures of the above mentioned cationic fabric softeners can also be used. The amount of softener is at least 2% and generally up to 6, 8 or 10% for the so-called "1:1 use formulation" and from about 10, 12 or 15 % up to 20, 25, 30 and 35% for the so-called "3:1 concentrates".

The second ingredient of the compositions is the fatty alcohol wherein the hydrophobic group may be a straight or branched chain alkyl or alkenyl group having from 10 to 24, preferably from 10 to 20, especially preferably from 12 to 20 carbon atoms. Specific examples of the fatty alcohol include decanol, dodecanol, tetradecanol, pentadecanol, hexadecanol, octadecanol, lauryl alcohol, palmityl alcohol, stearyl alcohol, oleyl alcohol, and mixtures thereof. Furthermore, the fatty alcohol may be of natural or synthetic origin and may include, for example, mixed alcohol, such as C_{16} to C_{18} alcohols prepared by Ziegler polymerization of ethylene.

The fatty alcohol is present in the composition in a lesser amount relative to the cationic fabric softener such that the ratio, by weight, of the cationic fabric softener to fatty alcohol is in the range of 6:1 to 3:1. Within these proportions, the fatty alcohol may be present in the formulation, based on the total weight of the aqueous composition, in the range of from 0.2% to 10% by weight, preferably 2.0 to 5% by weight, for the concentrated formulation, and in the range of from about 0.2 to 2%, preferably from about 0.75 to 1.5% by weight for the ready-to-use formulation.

The amount of the water-soluble cationic polymer relative to the cationic softener, on a weight basis, is such that the ratio of softener to polymer ranges from 50:1 to 2:1, more preferably 30:1 to 5:1.

The total amount of the active fabric softening components (cationic fabric softener plus fatty alcohol) should be at least 11% by weight, preferably at least 12% by weight, more preferably 12 to 20% by weight, especially preferably 12 to 16% by weight, for the concentrated formulation. Within these high concentrations of the fabric softening components, highly stable and pourable compositions can be obtained which do not gel upon addition to cold or warm water. Furthermore, in view of the high total amounts of the active fabric softening components, the consumer is provided with a wide choice in suitable dosages which can still provide effective softening over wide ranges of fabric loads. Generally, however, it is sufficient to provide the compositions of this invention in amounts which provide a concentration in the range of from 10 ppm to 10,000 ppm, preferably from 50 ppm to 500 ppm, of total active ingredients when added to the rinse liquor of a washing cycle. Accordingly, the formulations should be diluted prior to use in an amount depending on the starting concentration and desired level of performance, from 1 to 4 times, preferably 2 to 3 times with water. Tap water is sufficient for this purpose. For the ready-to-use formula, which can be added directly to the fabrics, generally during the rinse cycle of the overall washing operation in an automatic washing machine, the total amount of active softening ingredients will be from 3 to 8%, preferably from 3.5 to 6% by weight, based on the total composition.

A preferred ready to use composition contains by weight, 3 to 5% quaternary ammonium softener, 0.75 to 1.5% fatty alcohol and 0.1 to 0.5% water-soluble cationic acrylic polymer.

It is one of the outstanding advantages of the present invention that it is not required to include any additional ingredients such as nonionic surfactant emulsifiers, lower alkanols, etc. to formulate stable homogeneous pourable compositions from the mixed cationic fabric softener and fatty alcohol. However, compositions of just cationic softener and fatty alcohol tend to be of too low viscosity and the addition of the polymer not only overcomes this deficiency but also does not detract from softening performance.

In addition to the foregoing components of the softening compositions of this invention, there may also be included numerous conventional, supplemental and optional ingredients which do not adversely affect the stability and/or functional characteristics of the instant compositions. Thus, for example, there may be present the ubiquitous perfumes, dyes, pigments, opacifiers, germicides, optical brighteners, anticorrosion agents, preservatives, and the like. Where used, each of these components may comprise up to 0.5%, preferably up to 0.2%, for example from 0.001% to 0.1% by weight of the aqueous composition. The use of perfumes, dyes and optical brighteners are especially preferred additives in terms of consumer appeal.

The balance of the compositions of the present invention is provided by water which may be distilled, deionized or tap water.

As noted above, it is generally not required to add any additional ingredients to the active fabric softening components in order to provide the homogeneous stable low viscosity pourable and dispersible fabric softening compositions of this invention.

For example, in the case of one preferred embodiment of the invention wherein the cationic fabric softener is distearyl dimethyl ammonium chloride (DSDMAC) and wherein the fatty alcohol is a C₁₆ to C₁₈ alkyl alcohol, the composition is prepared directly using a high pressure homogenizer. Thus, a mixture of DSDMAC and the C₁₆ - C₁₈ alcohol when dispersed in hot water forms a gel which can be broken in high pressure homogenizer resulting, after cooling, in a stable liquid product.

The following examples will serve to illustrate the present invention. Parts are by weight unless otherwise indicated.

EXAMPLE I

A composition is prepared containing

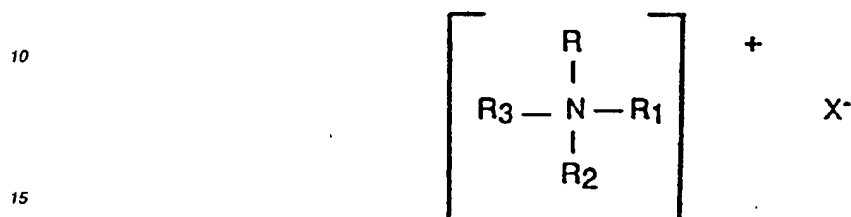
	Weight %
Di-hydrogenated tallow dimethyl ammonium chloride	3.6
C ₁₆ - C ₁₈ alcohol	0.9
Homopolymeric N,N-dimethyl ammonium ethyl methacrylate chloride	0.2

This composition gives better softness than one without the polymer. Furthermore, the viscosity without the polymer is very low (20 - 40 cps) whereas with it, the viscosity ranges from 100 to 400 cps.

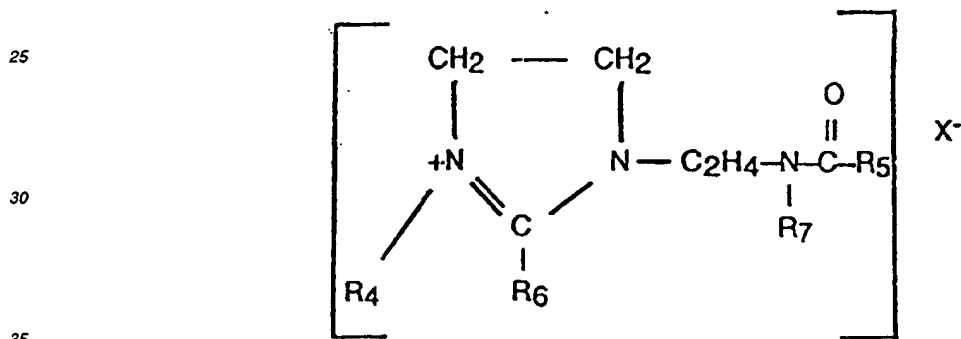
Claims

1. A stable, medium viscosity, pourable, aqueous fabric softening composition comprising, by weight

- (a) at least 2% of a dispersible, water-insoluble, cationic fabric softener selected from the group consisting of quaternary ammonium salts having the formula



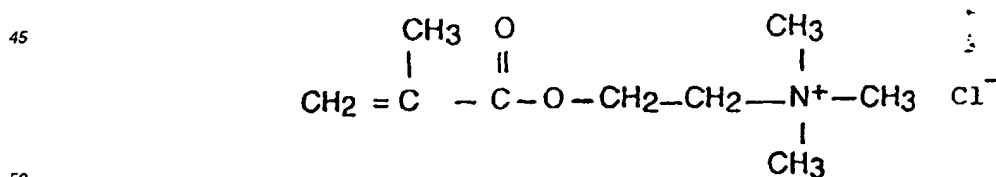
wherein R represents a hydrocarbyl group of from about 12 to 24 carbon atoms; R_1 represents a lower alkyl of 1 to 4 carbon atoms or a hydrocarbyl group of from 12 to 24 carbon atoms, R_2 and R_3 represent a lower alkyl of 1 to 4 carbon atoms and X^- represents chloride, bromide or methosulfate; and an imidazolinium compound having the formula :



wherein R_4 is hydrogen or a lower alkyl of 1 to 4 carbon atoms, R_5 is an alkyl containing from 9 to 25 carbon atoms, R_6 is an alkyl containing from 8 to 25 carbon atoms, R_7 is hydrogen or an alkyl of 1 to 4 carbon atoms and X^- is chloride, bromide or methosulfate and mixtures thereof;

(b) 0.2% to 10% of a fatty alcohol having a straight or branched chain alkyl or alkenyl group of 10 to 24 carbon atoms, the weight ratio of said cationic softener to said fatty alcohol being from 6:1 to 3:1;

(c) a water soluble, viscosity increasing cationic polymer which is a homopolymer of the following monomer unit



having a molecular weight of 50,000 to 2,000,000,

the weight ratio of said cationic softener to said polymer being from 50:1 to 2:1;

the total weight of (a) plus (b) plus (c) being 3 % to 35% of the composition; and

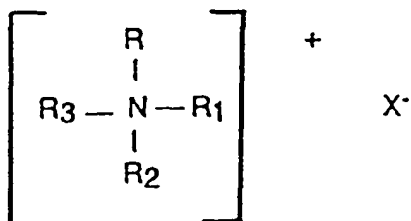
(d) the balance being water.

2. A fabric softening composition in accordance with claim 1 wherein the total weight of (a) plus (b) is about 3% to 8% of the composition.
3. A fabric softening composition in accordance with claim 2 wherein the weight of (a) plus (b) is 3.5% to 6% of the composition.
4. A fabric softening composition in accordance with claim 3 which contains, by weight, 3% to 5% of said cationic softener, 0.75% to 1.5% of said fatty alcohol and 0.1% to 0.5% by weight of said water-soluble viscosity increasing polymer.
5. A fabric softening composition in accordance with claim 4 wherein said softener is dimethyl dihydrogenated tallow ammonium chloride and there is present a C₁₂-C₂₀ alkanol.
6. Use of a fabric softening composition in accordance with any one of claims 2 to 5 wherein the said composition is directly added to fabrics in the rinse cycle of an automatic washing machine.
7. A fabric softening composition in accordance with claim 1 wherein the total weight of (a) plus (b) is at least about 11% by weight.
8. A fabric softening composition in accordance with claim 7 wherein the total weight of (a) plus (b) is 12% to 20% of the composition.
9. A fabric softening composition in accordance With claim 1 wherein said cationic softener is a dimethyl di-C₁₄-C₂₂ alkyl ammonium chloride and there is present a C₁₂-C₂₀ alkanol, the weight ratio of said cationic softener to said polymer being 30:1 to 5:1.
10. Use of a fabric softening composition in accordance with any one of claims 7 to 9 wherein the said composition is diluted from 1 to 4 times with water and the diluted composition is added to fabrics in the rinse cycle of an automatic washing machine.

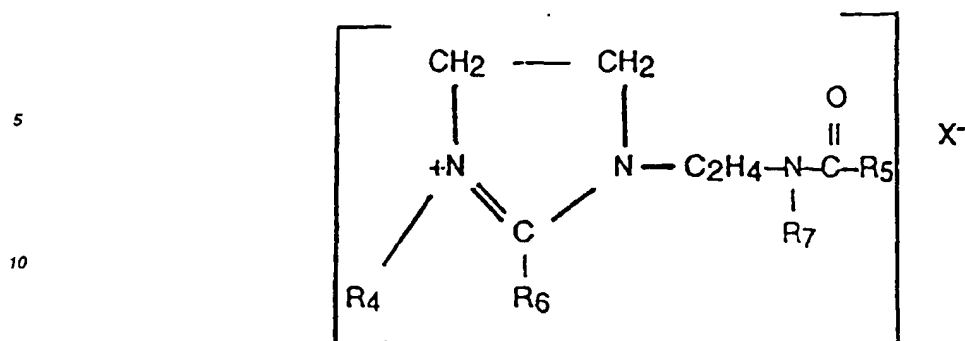
Revendications

1. Composition assouplissante pour tissus, aqueuse stable à moyenne viscosité, pouvant être versée, comprenant,

(a) au moins 2 % d'un agent assouplissant pour tissus cationique, dispersable, insoluble dans l'eau, choisi dans le groupe formé par les sels d'ammonium quaternaire ayant la formule



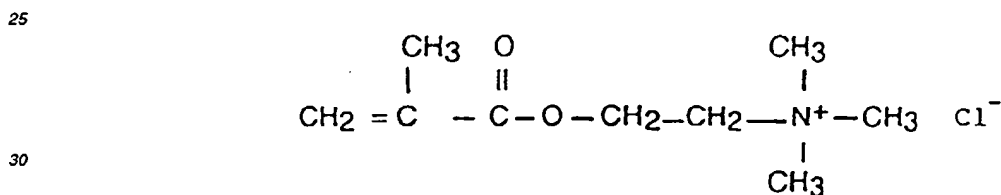
où R représente un groupe hydrocarbyle d'environ 12 à 24 atomes de carbone, R₁ représente un groupe alkyle inférieur de 1 à 4 atomes de carbone ou un groupe hydrocarbyle de 12 à 24 atomes de carbone, R₂ et R₃ représentent un groupe alkyle inférieur de 1 à 4 atomes de carbone et X⁻ représente un ion chlorure, bromure ou méthylsulfate ; et un composé d'imidazolinium ayant la formule :



15 où R_4 est un atome d'hydrogène ou un groupe alkyle inférieur de 1 à 4 atomes de carbone, R_5 est un groupe alkyle contenant 9 à 25 atomes de carbone, R_6 est un groupe alkyle contenant 8 à 25 atomes de carbone, R_7 est un atome d'hydrogène ou un groupe alkyle de 1 à 4 atomes de carbone et X^- est un ion chlorure, bromure ou méthylsulfate ; et leurs mélanges ;

20 (b) 0,2 % à 10 % d'un alcool gras ayant un groupe alkyle ou alcényle à chaîne droite ou ramifiée de 10 à 24 atomes de carbone, le rapport en poids dudit agent assouplissant cationique audit alcool gras étant de 6:1 à 3:1 ;

(c) un polymère cationique hydrosoluble augmentant la viscosité, qui est un homopolymère du motif de monomère suivant



ayant un poids moléculaire de 50 000 à 2 000 000,

35 le rapport en poids dudit agent assouplissant cationique audit polymère étant de 50:1 à 2:1 ;

le poids total de (a) plus (b) plus (c) étant de 3 % à 35 % de la composition ; et

(d) le reste étant de l'eau.

40 2. Une composition assouplissante pour tissus selon la revendication 1, dans laquelle le poids total de (a) plus (b) est d'environ 3 % à 8 % de la composition.

3. Une composition assouplissante pour tissus selon la revendication 2, dans laquelle le poids de (a) plus (b) est de 3,5 % à 6 % de la composition.

45 4. Une composition assouplissante pour tissus selon la revendication 3, qui contient, en poids, 3 % à 5 % dudit agent assouplissant cationique, 0,75 % à 1,5 % dudit alcool gras et 0,1 % à 0,5 % en poids dudit polymère hydrosoluble augmentant la viscosité.

50 5. Une composition assouplissante pour tissus selon la revendication 4, dans laquelle ledit agent assouplissant est le chlorure de diméthyl-di(sulf hydrogéné)ammonium et qui contient un alcanol en C_{12} - C_{20} .

55 6. Utilisation d'une composition assouplissante pour tissus selon l'une quelconque des revendications 2 à 5, dans laquelle ladite composition est ajoutée directement aux tissus dans le cycle de rinçage d'une machine à laver automatique.

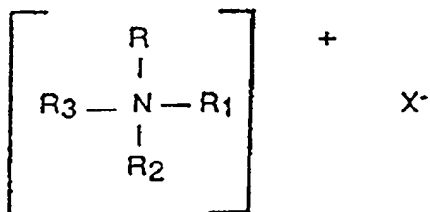
7. Une composition assouplissante pour tissus selon la revendication 1, dans laquelle le poids total de (a) plus (b) est d'au moins environ 11 % en poids.

8. Une composition assouplissante pour tissus selon la revendication 7, dans laquelle le poids total de (a) plus (b) est de 12 % à 20 % de la composition.
9. Une composition assouplissante pour tissus selon la revendication 1, dans laquelle ledit agent assouplissant cationique est un chlorure de diméthyl-di(alkyl en C₁₄-C₂₂)-ammonium et qui contient un alcanol en C₁₂-C₂₀, le rapport en poids dudit agent assouplissant cationique audit polymère étant de 30:1 à 5:1.
10. Utilisation d'une composition assouplissante pour tissus selon l'une quelconque des revendications 7 à 9, dans laquelle ladite composition est diluée de 1 à 4 fois avec de l'eau et la composition diluée est ajoutée aux tissus dans le cycle de rinçage d'une machine à laver automatique.

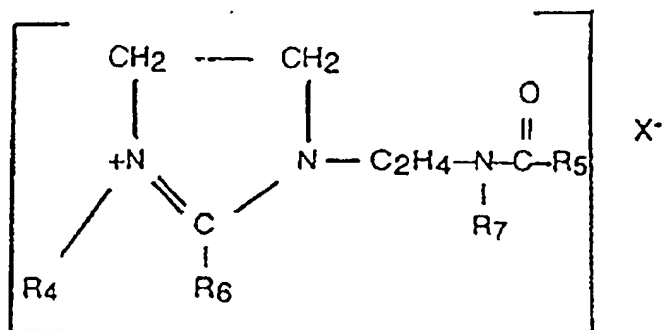
Patentansprüche

1. Stabile, mittelviskose, gießbare, wäßrige, Gewebe/Stoff weichmachende Zusammensetzung, die bezogen auf das Gewicht,

(a) mindestens 2 % eines dispergierbaren, in Wasser unlöslichen, kationischen Gewebe-/Stoffweichmachers ausgewählt aus der Gruppe bestehend aus quartären Ammoniumsalzen der Formel



in der R eine Kohlenwasserstoffgruppe mit etwa 12 bis 24 Kohlenstoffatomen ist, R₁ ein niederes Alkyl mit 1 bis 4 Kohlenstoffatomen oder eine Kohlenwasserstoffgruppe mit 12 bis 24 Kohlenstoffatomen ist, R₂ und R₃ niedere Alkyle mit 1 bis 4 Kohlenstoffatomen sind und X⁻ Chlorid, Bromid oder Methosulfat ist, und einer Imidazoliniumverbindung der Formel

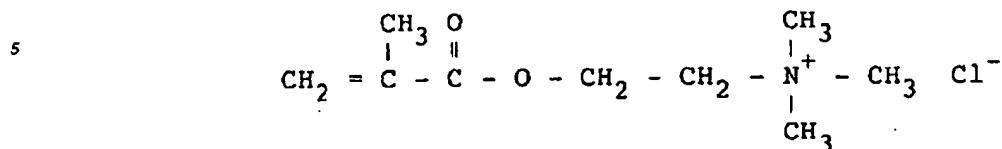


in der R₄ Wasserstoff oder ein niederes Alkyl mit 1 bis 4 Kohlenstoffatomen ist, R₅ ein Alkyl ist, das 9 bis 25 Kohlenstoffatome enthält, R₆ ein Alkyl ist, das 8 bis 25 Kohlenstoffatomen enthält, R₇ Wasserstoff oder ein Alkyl mit 1 bis 4 Kohlenstoffatomen ist und X⁻ Chlorid, Bromid oder Methosulfat ist, und Mischungen derselben;

(b) 0,2 % bis 10 % Fettalkohol mit einer geradkettigen oder verzweigt-kettigen Alkyl- oder Alkenylgruppe mit 10 bis 24 Kohlenstoffatomen, wobei das Gewichtsverhältnis des kationischen Weichmachers zu dem Fettalkohol 6 : 1 bis 3 : 1 beträgt,

(c) in Wasser lösliches, die Viskosität erhöhendes kationisches Polymer, das ein Homopolymer der folgenden

Monomereinheit



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mit einem Molekulargewicht von 50 000 bis 2 000 000 ist, wobei das Gewichtsverhältnis des kationischen Weichmachers zu dem Polymer 50 : 1 bis 2 : 1 beträgt und das Gesamtgewicht von (a) plus (b) plus (c) 3 % bis 35 % der Zusammensetzung ausmacht, und

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(d) als Rest Wasser umfaßt.

2. Gewebe/Stoff weichmachende Zusammensetzung nach Anspruch 1, bei der das Gesamtgewicht von (a) plus (b) etwa 3 % bis 8 % der Zusammensetzung ausmacht.
- 20 3. Gewebe/Stoff weichmachende Zusammensetzung nach Anspruch 2, bei der das Gewicht von (a) plus (b) 3,5 % bis 6 % der Zusammensetzung ausmacht.
4. Gewebe/Stoff weichmachende Zusammensetzung nach Anspruch 3, die, bezogen auf das Gewicht, 3 % bis 5 % des kationischen Weichmachers, 0,75 % bis 1,5 % des Fettalkohols und 0,1 % bis 0,5 Gew.-% des in Wasser löslichen, die Viskosität erhöhenden Polymers enthält.
- 25 5. Gewebe/Stoff weichmachende Zusammensetzung nach Anspruch 4, bei der der Weichmacher Dimethyl-di-hydriertes-talg-ammoniumchlorid ist und ein C₁₂- bis C₂₀-Alkanol vorhanden ist.
- 30 6. Verwendung einer Gewebe/Stoff weichmachenden Zusammensetzung gemäß einem der Ansprüche 2 bis 5, bei der die Zusammensetzung direkt zu den Geweben/Stoffen im Spülzyklus einer Waschmaschine gegeben wird.
7. Gewebe/Stoff weichmachende Zusammensetzung nach Anspruch 1, bei der das Gesamtgewicht von (a) plus (b) mindestens etwa 11 Gew.-% ausmacht.
- 35 8. Gewebe/Stoff weichmachende Zusammensetzung nach Anspruch 7, bei der das Gesamtgewicht von (a) plus (b) 12 % bis 20 % der Zusammensetzung ausmacht.
9. Gewebe/Stoff weichmachende Zusammensetzung nach Anspruch 1, bei der der kationische Weichmacher ein Dimethyl-di-C₁₄- bis C₂₂-alkylammoniumchlorid ist und ein C₁₂- bis C₂₀-Alkanol vorhanden ist, wobei das Gewichtsverhältnis des kationischen Weichmachers zu dem Polymer 30 : 1 bis 5 : 1 beträgt.
- 40 10. Verwendung einer Gewebe/Stoff weichmachenden Zusammensetzung gemäß einem der Ansprüche 7 bis 9, bei der die Zusammensetzung 1- bis 4fach mit Wasser verdünnt wird und die verdünnte Zusammensetzung zu den Geweben/Stoffen im Spülzyklus einer Waschmaschine gegeben wird.
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